

## **APPENDIX 1**

### **Information developed prior to the Corps of Engineer's Scoping Notice on proposal to extend Summer Pool to July 15**

<b><u>Item #</u></b>	<b><u>Title</u></b>
1	Letter from Corps of Engineers to Congressman Whitfield, dated March 18, 2005 – follow-up on February 25, 2005 Meeting (2 pages)
2	Letter from Tennessee Valley Authority to Corps of Engineers, dated April 1, 2005 – response to March 18, 2005 letter to Congressman Whitfield (2 pages)
3	Minutes to Resource Agency Meeting Hosted by the Corps of Engineers on April 3, 2005 to discuss proposal to extend summer pool until July 15 (5 pages)
4	Letter from the U.S. Fish and Wildlife Service, Tennessee National Wildlife Refuge Complex, dated May 9, 2005, documenting concerns over proposal to extend summer pool until July 15 (7 pages)
5	Letter from the Tennessee Wildlife Resources Agency, dated May 11, 2005, documenting concerns over proposal to extend summer pool until July 15 (2 pages)
6	Letter from the U.S Fish and Wildlife Service, Tennessee Field Office, dated May 19, 2005, documenting concerns over proposal to extend summer pool until July 15 (6 pages)
7	Letter from the Kentucky Department of Fish and Wildlife Resources, dated June 10, 2005, documenting concerns over proposal to extend summer pool until July 15 (2 pages)



## Appendix 1 - Item 1

DEPARTMENT OF THE ARMY  
NASHVILLE DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 1070  
NASHVILLE, TENNESSEE 37202-1070

March 18, 2005

IN REPLY REFER TO

Operations Division

Honorable Ed Whitfield  
Representative in Congress  
1403 South Main Street  
Hopkinsville, Kentucky 42240

Dear Mr. Whitfield:

During a February 25, 2005, meeting to discuss water level management on Lake Barkley, you requested an evaluation of possible adjustments to keep summer water levels higher than the Nashville District U.S. Army Corps of Engineers (Corps) currently operates the lake. Specifically, you asked us to extend the summer pool to July 15.

The original guide curve for Lake Barkley (completed in March 1966) was the same as that for the existing Kentucky Lake (operated by the Tennessee Valley Authority (TVA)) since the two projects are connected via the unregulated Barkley Canal. This guide curve called for initiating drawdown from summer pool elevation 359 on June 15 and reaching winter pool elevation 354 on December 1. In the 1970's, a request was made to extend the summer pool to benefit recreation interests. An alternative that included extending summer pool to July 1 was approved and subsequently implemented in 1980. While the current guide curve calls for drawdown on July 1, we (Corps and TVA) delay the onset of the drawdown until after the Fourth of July holiday to facilitate recreation interests on the lakes.

Your current request is to extend the summer pool to July 15. I believe that from a flood control perspective we might be able to accommodate this revision, although a hydrology and hydraulic analysis will be required before making a firm determination. I do anticipate concern from the U.S. Fish and Wildlife Service and from the wildlife resource agencies in both Tennessee and Kentucky. To better understand their issues and to evaluate possible flood control effects, the Nashville District will need to prepare an environmental assessment under the National Environmental Policy Act (NEPA) prior to conducting any trial period.

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This would allow all interested stakeholders, including the agencies representing fish and wildlife interests as well as the general public, to formally present their concerns for consideration. Barring overwhelming negative comment, we would begin a trial period as soon as practical. Then, following a trial period and in accordance with our established procedures, the NEPA process would again be initiated prior to making any decision regarding permanent guide curve modifications. Depending on the nature of our findings, this may result in an environmental impact statement. Consultation with TVA finds them in agreement with this proposal.

If adopted permanently, the proposed guide curve would represent a 30-day extension over that found in the original project authorization. It is our opinion that any further extensions will produce unacceptable risk to the project purpose of flood damage reduction. Any additional extension request would require a comprehensive study to validate the magnitude of the risk to flood control and other project benefits. Such a study would have to include an evaluation of both the Cumberland and Tennessee Basin reservoir systems as well as those for the Ohio and Mississippi Rivers. This would be a lengthy and costly endeavor, and I believe would have increased flood control impacts downstream of Kentucky/Barkley dams.

Sincerely,



Byron G. Jorns  
Lieutenant Colonel  
Corps of Engineers  
District Engineer

DE 117

OPS

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1401

Janet C. Herrin, P.E.  
Senior Vice President  
River Operations

April 1, 2005

Lieutenant Colonel Byron G. Jorns  
Nashville District  
U.S. Army Corps of Engineers  
P.O. Box 1070  
Nashville, Tennessee 37202-1070

Dear Colonel Jorns:

This is in response to the U.S. Army Corps of Engineers' (USACE) proposal to extend summer pool levels on Lake Barkley to July 15. Because Lake Barkley and the Tennessee Valley Authority's (TVA) Kentucky Reservoir are connected through the unregulated Barkley Canal, any change on Lake Barkley necessarily will impact operations on Kentucky Reservoir. We are writing to provide you TVA's views on the proposal and to identify what needs to be done before proceeding with the proposal.

In your March 18, 2005 letter to Representative Whitfield, you indicated that USACE might be able to accommodate a 10-day extension of the summer pool levels from a flood control perspective, but that additional analyses have to be completed before a final determination could be made. This includes preparation of an Environmental Assessment (EA) that would be coordinated with other interested agencies and the general public. Because Lake Barkley and Kentucky Reservoir are connected, these additional analyses must consider the potential effects of extending summer pool levels on both water bodies. TVA would like to cooperate in the preparation of the EA. Assuming no significant negative response, you state that USACE would extend summer pool levels for a limited trial period; presumably to gather additional data for a more detailed investigation before any permanent operational changes are made. TVA agrees that before any decisions are made, the results of these additional analyses and the views of the general public and other agencies should be considered.

As your staff may recall, USACE and TVA performed a multi-year test on an alternate drawdown plan for Kentucky Reservoir and Lake Barkley in the mid-1990s. The

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Lieutenant Colonel Byron G. Jorns

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comments which were received from Federal agencies, including USACE, and state agencies during the trial implementation period were not favorable and included concern for the loss of Fall waterfowl/shorebird habitat and increased flood risk. As a result, the alternative drawdown curve was not implemented on a permanent basis.

In our comprehensive review of operations on the TVA reservoir system, *Final Programmatic Environmental Impact Statement, Tennessee Valley Authority Reservoir Operations Study* (February 2004) ("ROS EIS"), TVA concluded that extending summer pool elevations on Kentucky Reservoir potentially could be accommodated without unacceptable flood risk impacts. We chose not to pursue this primarily because of USACE's objections as well as state resource agencies and the U.S. Fish and Wildlife Service (USFWS). As a cooperating agency on the ROS EIS, USACE was provided many of the analyses underlying TVA's study, including flood risk analyses. These should be the starting point for the additional analyses USACE is undertaking. We suggest the EA tier from the ROS EIS.

As indicated in your March 18 letter, the EA should address the concerns raised by the USFWS, other wildlife management agencies, and the public about the potential impacts on wildfowl and shorebirds from extending pool levels on Kentucky Reservoir. Because of these concerns, TVA committed to working with wildlife management agencies to develop better benchmark data about shorebird and waterfowl populations and habitat needs, especially in relation to the mudflats on Kentucky Reservoir. Extending pool levels for a trial period could interfere with this benchmarking data gathering effort which should also be addressed. Finally, the EA should also address the concerns raised by USACE itself during the ROS EIS process. For your convenience, we are enclosing copies of the letters and comments we received from USACE, the USFWS, and state agencies that addressed the issue of extending summer pool levels on Kentucky Reservoir and Lake Barkley.

I have asked Morgan Goranflo, TVA's Senior Manager of River Scheduling, to take the lead on this for TVA. Mr. Goranflo can be reached at (865) 632-6857. We look forward to working with USACE on the assessment of your proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Janet C. Herrin", with a large, stylized initial "J" and "H".

Janet C. Herrin

Enclosures

CELRN-PM-P

19 May 2005

**MEMORANDUM FOR RECORD**

**SUBJECT: Minutes of Meeting on Proposal to Extend Summer Pool at Lake Barkley and Kentucky Lake**

**1. Tim Higgs (Corps of Engineers Project Planning Branch): – Introductions & Purpose.** Purpose is to discuss recent proposal from Congressman Whitfield's office to extend summer pool on Lake Barkley until July 15<sup>th</sup>. Copies of the meeting agenda, figure showing pool extension proposals and the existing guide curve, and the Corps March 18, 2005 letter to the Congressman's office were distributed to the attendees. A list of meeting attendees follows these minutes.

**2. Bob Sneed (Corps of Engineers Project Water Management Section):** Provided background on the Cumberland and Tennessee River Systems & current proposal.

**Background:**

- Original Guide Curve –adopted previous KY Lake Curve (June 15 drawdown)
- 1980 Existing Curve adopted for KY-BAR (July 1 drawdown, in reality July 5)
- Pool “Noise” -  $\pm 1$  foot, in reality always to plus side of guide curve
- Noise – Navigation concerns below guide curve & occasional seiche (under certain wind conditions, pool in lower lake can drop even lower)- Morgan
- During wet summers, pool may stay above guide curve for extended periods
- Mid-90's: attempted 3 year stair-step drawdown at request of resource agencies
- Did 2 years of trial (during 5 yr period): Decision made to halt trial, no benefits
- Slide showing various issues that resulted from extended summer pool
- TVA ROS EIS: looked at a wide range of possible changes at Kentucky, including extensions through Labor Day, November 1, and changes in winter pool levels), recommended no change (note agency comments)
- Corps opposed any change due to increased flood damage risks

**Current Proposal:**

- Corps met with Whitfield staff in Feb 2005 – formal verbal request made to extend summer pool until July 15
- Written response requested from Corps (refer to letter dated 3-18-05)
- Corps responded that EA required before trial implemented
- Public announcement by Mr. Pape (Whitfield staff)- 30 day pool extension (in reality to July 15 , 30 days from June 15)
- Proposal Guide Curves: max pool change (over existing) ranged from 0.5' to 1.2'

**3. Tom Swor (Corps of Engineers Project Planning Branch):** discussed National Environmental Policy Act (NEPA) coverage for any pool level proposal and summarized similar past changes.

- Two previous experiments on pool extensions



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- 1980: EA on extension from June 15 to July 1
- 3 Year Trial: done under a categorical exclusion with the agreement to perform data collection by the resource agencies and post-trial NEPA document
- Trial stopped early & with the exception of a letter from the TN NWR, no evaluation of trial (only verbal observations)
- Current pool extension: could conceivably be done under a Cat Ex with data collection to aid future NEPA document before permanent decision
- Follow-up EA/EIS after trial extensions

### 4. Group Discussions:

- Lee recommended against any extension without adequate base data
- John: there was no evaluation of button bush germination impacts resulting from June 15-July 5 change. It is flood tolerant but needs drying for germination, so the shoreline may not be getting replacement button bush
- Tom: possibly use aerial photos to look at past trends
- John: NWR-TVA attempting shorebird monitoring, was delayed last year due to water levels. An extension now would throw off this monitoring.
- Elizabeth: shorebirds have dealt with the noise associated with the current drawdown, documenting the current baseline is critical
- Tim B: concerning tourism benefit, though there were no benefits from stair step operations & there was no benefit to fisheries. Quick drawdown is detrimental to fish recruitment.
- Robert: may be a TVA study showing button bush decline, current conditions are pushing its survival, may be old arials to compare to current
- Lee: adequate baseline is critical to proper decision making, two year minimum. No way to compare before & after affects
- John: can see impacts from original change (from June 15), less mudflats-wigeons down. Pool extensions would worsen erosion of cultural resource sites (some protected by TVA)
- Robert: at Cross Creeks NWR, change would result in change from gravity operation to pumped water manipulations, pumping equipment would have to be purchased. Current pools are as late as can be successfully tolerated.
- Elizabeth: 356 to 356.5 is shorebird habitat that is needed in KY by mid-Aug. Shorebird habitat would be improved with the original curve. Peak migration in KY is late July to mid Aug, compromised with past pool change but any more would be too much. Additional clarification added: The original drawdown of June 15 began pulling water such that when peak migration occurs in mid August, the water level has gotten low enough that there is mud flat habitat exposed for shorebirds. Pushing the drawdown out to July 5 in the 80s created a situation where the water level did not get low enough to expose habitat during peak migration. However, the current scenario does provide habitat for the later migrating juveniles (fall migration ends in October). Therefore, pushing out the draw down date again will delay exposing habitat by 10 more days, meaning that is 10 more days where shorebirds will not find critical habitat during fall migration, especially the more vulnerable juveniles.

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- Tim H: note that noise is always to high side so any change may be aggravated with noise
- John: at TN NWR, waterfowl down last year attributed to higher water but recognizes that many other factors involved in migratory birds.
- Lee asked what had changed from the Corps response in the TVA EIS. Dave summarized concerns about flood impacts in lower Ohio & Mississippi, although this was for a longer summer pool
- Mike asked about social consideration in any NEPA, both KY & TN felt fishermen and waterfowl hunters would oppose any extensions. In response to questions about the \$26K power costs associated with the mid-90's stairstep trial drawdown, Morgan responded that power impacts would be evaluated in detail if an extension is pursued. Lee thinks an extension may produce opposite affects than may be perceived by boating interests
- David: TVA ROS EIS was done with open public/agency involvement and the outcome was a recommendation to have no change on KY Lake. Concerned about the current proposal being done with no public involvement. KY Lake is a significant biological resource, without data Corps should err on the side of caution and make sure adequate background is developed. Comprehensive EIS may be required
- Maurice: Study without baseline may be problematic. Could develop economic benefits but nothing to compare change too. Corps of Engineers needs to present concerns of agencies to Congressman's office
- Robert: TVA has contracted with Austin Peay University on vegetation study. Tim B/David: (Echo) cover restoration project being done on KY Lake by high schools students, very successful from an educational standpoint, will provide more information (contact Lance Rider, TWRA).
- Several: Change may require EIS due to significance of resource and impacts of any extension when cumulative affects are considered. Need to look at past and future changes. If EIS done, need to include alternative to go back to original guide curve.

### **5. Conclusion (Tom Swor):**

Corps needs letters documenting agency concerns and any supporting data. Include any proposed monitoring considerations. Furnish TVA a copy of the letters. Addresses are listed below. The Corps will report concerns to our senior management and follow-up with Congressman's office as needed.



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**Consensus of resource agencies:** opposed to any extensions. Current proposal doesn't fit a NEPA categorical exclusion due to controversy and impacts. Would push for thorough evaluation of benefits and impacts, develop adequate baseline and push for mitigation of impacts at refuges likely in an EIS tiered from TVA ROS EIS.

**Minutes Prepared by:**

Tim Higgs  
Environmental Engineer  
Project Planning Branch  
Nashville District Corps of Engineers  
(615) 736-7863

**Send letters to:**

Lieutenant Colonel Byron G. Jorns  
Nashville District  
U.S. Army Corps of Engineers  
P.O. Box 1070  
Nashville, TN 37202-1070

Jon Loney  
Tennessee Valley Authority  
400 West Summit Hill Drive, WT9B  
Knoxville, TN 37902

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### Meeting on Proposal to Extend Summer Pool at Lake Barkley and Kentucky Lakes April 3, 2005 at Corps of Engineers - Regulatory Office, Nashville

#### Meeting Participants

<u>Name</u>	<u>Agency</u>	<u>Phone</u>	<u>Email Address</u>
Tim Higgs	Corps of Engineers -Nashville - Planning	615-736-7863	timothy.a.higgs@usace.army.mil
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Jon Loney	TVA	865-632-3012	jmloney@tva.gov
Brock Jones	Corps of Engineers	270-362-4236	brock.c.jones@usace.army.mil
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Tom Swor	Corps of Engineers- Nashville-Planning	615-736-7853	carl.t.swor@usace.army.mil
Dave Buelow	Corps of Engineers- Cincinnati	513-684-3070	david.p.buelow@lrdor.usace.army.mil
Morgan Goranflo	TVA	865-632-6857	hmgoranflo@tva.gov
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Tim Broadbent	TWRA	731-432-5725	tim.broadbent@state.tn.us
David McKinney	TWRA	615-781-6577	dave.mckinney@state.tn.us



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# United States Department of the Interior



U. S. Fish and Wildlife Service  
Tennessee National Wildlife Refuge Complex  
3006 Dinkins Lane  
Paris, Tennessee 38242  
(731) 642-2091

May 9, 2005

Lieutenant Colonel Byron G. Jorns  
Nashville District  
U.S. Army Corps of Engineers  
P.O. Box 1070  
Nashville, TN 37202-1070

Dear Sir:

I would like to express my thanks for the invitation to attend the multi-agency meeting on May 3, 2005 in Nashville to discuss the possible extension of summer pool to July 15 on Barkley and Kentucky Reservoirs. The alternative drawdown schedules presented at this meeting are expected to have negative impacts on the management of wildlife habitats on both Cross Creeks and Tennessee National Wildlife Refuges (NWRs), even though the extension is only ten days past the current drawdown date of July 5. The two National Wildlife Refuges and thousands of migratory birds have already been significantly impacted by the drawdown schedule change from June 15 to July 5 that occurred in 1980. Any further extension will just exacerbate the problems caused by the 1980 change. Based on previous meetings we have attended with the special interest groups in favor of the extension, we anticipate that they will not be satisfied with the proposed extension. We anticipate the groups will continue to push for an even later extension of summer pool until Labor Day, which would further adversely impact refuge resources and facilities.

During the May 3<sup>rd</sup> meeting it was presented that the extension would be initiated this year under a three-year trial period. It would be conducted under a categorical exclusion from NEPA, and that an EA would have to be completed prior to permanent implementation. We do not feel this is appropriate for several reasons. First, the severity of the impacts and concerns presented during the meeting by several resource agencies made evident this change should not be considered a categorical exclusion. Also, we feel that an EIS is warranted due to cumulative impacts associated with the past changes that extended summer pool until July 1 in 1980 and the "unofficial" extension to July 5, as well as the potential for extensions that might occur in the future.

The later in the growing season the reservoirs are drawn down, the later mudflats are exposed, and the less opportunity native plants have to germinate and mature. The adverse impacts associated with the 1980 change were probably greater than anticipated.

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In a 1981 Tennessee National Wildlife Refuge annual report the Refuge Manager spoke to the impacts of the July 1 extension and stated, "This (the extended summer pool) is adversely affecting about 1,500 acres of (Tennessee Refuge) land".

For example, a substantial decline in refuge wigeon populations in the winter of 1980 was noted in a 1980 refuge report. The wigeon, unlike most puddle ducks, prefers the leafy part of plants as opposed to seeds. The annual plants that germinate on the reservoir mudflats provide valuable forage for this species. A look at the peak populations of wigeon on Tennessee NWR since 1964 reveal a decline started soon after the 1980 summer pool extension was implemented (see the attached graph). The average annual peak for the wigeon prior to the summer of 1980 was over 33,000 as compared to 8,600 after the Kentucky Lake summer pool was extended.

We have great concern that the three-year trial extension will be initiated without having adequate baseline data on the existing habitats and wildlife populations. During TVA's Reservoir Operations Study, TVA identified that there was a lack of data to fully assess the impacts of changes to the operating schedule of Kentucky Reservoir. To gather this information, TVA initiated a five-year study of shorebirds and mudflat vegetation this past summer. If the proposed extension is implemented this year, TVA's study will be compromised. We strongly recommend that any trial change to the operation schedules of the reservoirs be at least delayed until after this research is complete.

Delaying the fall drawdown on Barkley and Kentucky Reservoirs past the current schedule could potentially have the following impacts to wildlife, habitat resources, and facilities that occur on Cross Creeks and Tennessee NWRs: 1) Cause further loss of fall mudflat habitat for shorebirds and early migrating waterfowl. 2) Result in a loss and/or degradation of mudflats for wintering waterfowl, eagles, gulls, terns, and wading birds. 3) Reduce the water and habitat management capabilities within managed refuge impoundments. 4) Increase the risk of flooding within the managed impoundments. 5) Result in a loss of herbaceous, scrub/shrub, and forested wetlands. 6) Accelerate erosion of the reservoir shoreline and associated damage to refuge archeological sites, boat ramps, roads, dikes, and other facilities. Greater details of these impacts are provided below:

### Loss of fall mudflat habitat for shorebirds and early migrating waterfowl

During fall migration thousands of shorebirds utilize the mudflats on Barkley and Kentucky Reservoirs. The average peak fall migration of shorebirds in Tennessee occurs around mid-August. Typically, shorebird habitat is extremely limited during the fall due to dry conditions and dense vegetation that has developed through the summer adjacent to the reservoirs and other impounded waters. For this reason, the fall drawdown of Barkley and Kentucky Reservoirs is extremely important. Since most shorebird species prefer habitats that are open and away from dense cover, the water level needs to be low enough to expose flats that are not covered by woody vegetation. On Barkley and Kentucky Reservoirs the elevation of summer pool is 359 MSL and woody vegetation typically extends down to elevation 357.5 MSL. For adequate mudflat habitat to be

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available, the pool elevation needs to be around 356.5 MSL. Under the existing operations for these reservoirs this level is scheduled to be reached during late August. Typically, this is not the case even during years with normal rainfall since the "noise" around the guide curve is more often above the guide curve than at or below the scheduled pool level. During most years adequate shorebird habitat is not available until early September. This illustrates that a significant loss of shorebird habitat has already occurred when the 1980 extension was implemented. Any further habitat loss is unacceptable if we are to maintain shorebird populations in this region. This would include the endangered piping plover that has been documented as migrating through Western Kentucky and Tennessee.

Blue-winged teal are the first migrating waterfowl to arrive in Tennessee. The Tennessee Valley is along one of two major migration corridors for this species. This migration route extends from Manitoba to Florida. They first arrive in Tennessee during early August with the peak period of migration occurring around mid-September. Like shorebirds, blue-winged teal heavily utilize the mudflats on the reservoirs for feeding and loafing. They commonly feed on the seeds of sedges, grasses, and smartweed that were deposited on the flats in previous years, as well as insects and mollusks that may be present. During the migration period it is important for extensive mudflats with an abundant source of food to be present on Barkley and Kentucky Reservoirs. The existing management of these reservoirs provides good habitat at the appropriate time of the year for blue-winged teal to stop during migration. The drawdown also coincides with a special early duck season that provides recreational opportunities to a large number of hunters, many of which hunt on the mudflats of the reservoirs.

Traditionally, migrant Canada geese form the Southern James Bay Population (SJBP) would winter in large numbers within the Tennessee Valley. The December populations of SJBP geese in Tennessee prior to 1990 averaged over 40,000. Since that point the portion of the population that migrates into the Tennessee Valley has sharply declined to a present December average of less than 10,000 SJBP geese in Tennessee. Even though the overall population level of the SJBP has stabilized, the decline in the numbers that migrate to the Tennessee Valley continues. Migrant geese first arrive on Tennessee NWR around September 20 and generally will remain within the vicinity of the refuge until late winter. Typically, the best quality habitat available in September are the flats associated with the reservoirs. Geese browse the new growth of annual grasses and sedges that occur on these flats. The existing fall drawdown schedule for Barkley and Kentucky Reservoirs provides mudflat habitat for these early migrants.

All of the alternatives presented in the May 3<sup>rd</sup> meeting will result in a loss of mudflat habitat on both Barkley and Kentucky Reservoirs. Delays in the fall drawdown will eliminate or significantly reduce the quantity and quality of mudflat habitat available on these reservoirs to shorebirds and early migrating waterfowl. The quality of the mudflat habitat for waterfowl will be degraded since the delayed exposure of the flats will result in reduced germination and maturing of annual plants. These impacts identified above will result in population declines of early migrant bird species such as shorebirds, blue-winged teal, and SJBP geese.

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### Loss and/or degradation of mudflats for wintering waterfowl, eagles, gulls, terns, and wading birds

Approximately 300,000 ducks and geese, 100 bald eagles, and tens-of-thousands of other wetland dependant migratory birds typically occur on Tennessee and Cross Creeks NWR during the peak wintering period. Under the current reservoir operation policy the winter pool elevation of Barkley and Kentucky Reservoirs is 354 MSL. This level fluctuates throughout the winter depending upon several factors, but is largely influenced by rainfall. During most winters extensive mudflats with important food resources are periodically available for migratory birds.

Large numbers of waterfowl concentrate on the flats of the refuges to rest and feed. Canada geese and wigeon browse on the annual plants that germinate each year during the late summer and fall drawdown period. When the lake levels are low a high percentage of the populations of these two species will congregate on the flats. Mudflats are the preferred habitat for green-winged teal within this area. When large expanses of flats are present the majority of teal on the refuge will occur within this habitat. Green-winged teal forage on the seeds of annual plants that have been deposited on the flats in previous years, as well as insects and mollusks. It has been determined from the data collected during waterfowl surveys during the last nine years that the reservoir habitats provide a high percentage of the waterfowl use that occurs on Tennessee NWR.

The potential impacts from extended summer pools on mudflat vegetation and waterfowl use became apparent this year. The heavy rains associated with tropical storms passing through the Tennessee Valley last year did not allow the reservoir to drop much below 357 MSL for any extended period of time during the late summer and early fall. As a result the annual vegetation struggled to germinate on the flats and in many cases was killed by high water if germination had occurred. The end result was little to no waterfowl foods available on the flats. A comparison of the duck use that occurred on reservoir habitats verses the intensively managed dewatering area on the Duck River Unit depicted a major drop in waterfowl use of reservoir habitats. This year 22% of the duck use on the Duck River Unit occurred on the reservoir as compared to an average of 42% for the previous six years.

Bald eagles are regularly observed on the flats of Tennessee NWR scavenging the carcasses of fish and waterfowl. As the drawdown occurs fish occasionally get trapped in shallow waters and become an easy source of food for eagles. Gulls, terns, and wading birds utilize the flats of the reservoirs in large numbers throughout the drawdown and winter pool periods. The flats are primarily used for resting areas and are typically adjacent to shallow water feeding sites. The endangered least tern migrates through the area and utilizes flats for resting.

All the alternatives will result in some degree of adverse change in mudflat habitat quantity and/or quality for wintering waterfowl and other migratory birds. Some of the

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alternatives are expected to have significant impacts on the amount and quality of forage produced by annual plants that germinate on the flats. Canada geese, wigeon, and green-winged teal will be the waterfowl species adversely impacted the most, because they are more dependent upon the vegetation grown on the flats. Bald eagles, gulls, terns, and wading birds will also suffer a significant loss in habitat.

### Reduced water and habitat management capabilities within managed impoundments

There are over 7,000 acres of managed waters, within dozens of impoundments, on Tennessee and Cross Creeks NWR. Management emphasis in these impoundments is primarily focused on waterfowl, but many other wildlife species benefit from this valuable wetland habitat. During early spring, prior to the reservoirs being raised to summer pool, the water level in most of these impoundments is lowered to produce foods for waterfowl. A variety of habitat types are provided in these impoundments, including agricultural crops, moist soil vegetation (native plants that germinate and grow on sites that retain good soil moistures), and forested wetlands. Many of the impoundments are situated at a low elevation and do not have mechanical pumping capabilities. On these impoundments, the water has to be removed when the reservoir is at winter pool. Even some of the impoundments with pumping capabilities are managed by gravity drawdown to reduce management cost. Without pumping capabilities, summer rainfall will gradually refill the impoundments, limiting the amount of habitat that can be planted to agriculture or managed for moist-soil vegetation. Most of the impoundments on Tennessee NWR are located within the Duck River Bottoms dewatering area. We currently have pumping capabilities at that location. The impoundments on the Busseltown and Big Sandy units of Tennessee NWR and all of the impoundments on Cross Creeks NWR do not have established pumping capabilities. Portable pumps can be used on some of the smallest impoundments, but efficiency and available personnel limit the amount of pumping that can be accomplished. The current management strategy on many of these impoundments is to remove the water as the lake levels start dropping on July 5. For moist soil or agriculture production, this drawdown schedule is on the borderline of being too late. Any further extension of summer pool would eliminate management of these impoundments without the use of pumps.

All the alternatives will essentially eliminate the management of hundreds of acres of seasonally flooded wetlands on Cross Creeks and Tennessee NWRs. Pumping will be necessary to meet the habitat objectives established for these refuges. Funding and staff are not available to convert our water management from gravity flow methods to pumping. If the proposed change occurs, we will be forced to seek mitigation for these lost habitats.

### Increased risk of flooding within managed impoundment

All of the managed impoundments on the refuges are subject to flooding. Spring floods are common and occur in most years. Management strategies on the refuges have been adapted to this situation and good quality waterfowl habitat is produced in spite of spring flooding. Early summer floods (June) are less common, but occasionally do have



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impacts on the quality and quantity of waterfowl habitats, especially agricultural crops. Late summer and fall floods are very rare, but when they occur the impacts on the habitat will approach a total loss for the year. Winter floods are uncommon and usually only occur after January. The impacts to waterfowl foods have been limited in the past, but a winter flood could cause most of the habitats to be unavailable to waterfowl due to the water depth. Floods in any season will cause significant damage to the refuge infrastructure (levees, water control structures, roads, etc.).

All of the alternatives will increase the risk and potential impacts of flooding on the refuges above that of the current operations. When a preferred alternative is selected, a detailed analysis of the flood risk for each refuge and refuge unit should be conducted so that an adequate assessment of the impacts can be made.

### Loss of herbaceous, scrub/shrub, and forested wetlands

The herbaceous, scrub/shrub, and forested wetlands that ring Kentucky and Barkley Reservoirs provide important habitats for many species of fish, mammals, amphibians, reptiles, birds, and insects. These wetlands vary from narrow bands along the shoreline to extensive forests within the creek bottoms. From May to July, several thousands of acres of buttonbush and willow thickets are shallowly flooded while the reservoirs are at summer pool. Outside the summer pool period, primarily during the winter and spring, these herbaceous and woody wetlands will periodically flood during heavy rainfall events.

When the wetlands along the lakeshores are flooded, waterfowl will use these habitats extensively. Wood ducks require dense cover as brood habitat. The willow-buttonbush thickets provide an excellent overhead cover, and at the same time are open enough at the water surface to allow the wood duck broods to move easily and feed on the numerous invertebrates that are present. During high water events in the winter and early spring, mallards, black ducks, and wood ducks will move into these newly flooded areas to take advantage of a wide variety of food resources.

Many other species of birds utilize this riparian zone for nesting, foraging, and migration stopover habitat. Heron rookeries occur on island and in cypress sloughs in several locations on Tennessee NWR. The prothonotary warbler (a Partners In Flight priority species within the Central Hardwoods and East Gulf Coastal Plains Bird Conservation Regions) is a relatively common breeding bird within the riparian zone of Kentucky and Barkley Reservoirs. This warbler is limited to bottomland habitats, and nests in cavities that are located over or very close to water.

All the alternatives presented are expected to have significant negative impacts on the riparian zone wetlands along Barkley and Kentucky Reservoirs. Extending the duration that these habitats are inundated during the growing season will dramatically shrink the willow-buttonbush, water tupelo, and bald-cypress plant communities, and alter the plant composition of the bottomland hardwoods. The loss of the woody vegetation that is currently inundated at summer pool is anticipated to negatively impact the productivity of

## Appendix 1 - Item 4

the local wood duck populations and reduce the quantity and quality of wintering waterfowl habitat. It is expected that the woody plant communities in this zone will be replaced by emergent aquatic plants that will not provide good wood duck brood cover or foraging areas for wintering waterfowl. In many cases these emergent aquatic plant communities may be dominated by invasive exotic species such as alligatorweed and *Phragmites*.

### Accelerated erosion of the reservoir shoreline and associated damage to refuge archeological sites, boat ramps, roads, dikes, and other facilities

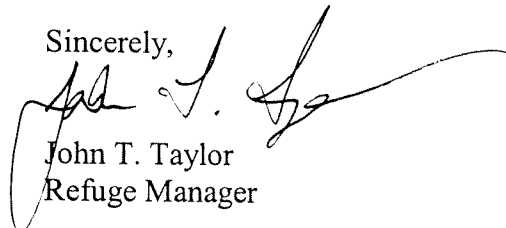
Shoreline erosion is a major problem along Barkley and Kentucky Reservoirs. The results are a loss of riparian and upland habitats and a decrease in water quality. Shoreline stabilization has become a high priority for Tennessee NWR to protect upland habitats, important archeological sites, and stabilize river islands. We are currently partnering with TVA to stabilize several sites on the refuge, and anticipate this project to continue indefinitely. All the alternatives are expected to accelerate the rate of shoreline erosion. Financial assistance from the Corp will be needed to expand the shoreline stabilization project if summer pool is extended later into the year.

The refuges are nationally known to have a wealth of archaeological sites. The proposal would certainly increase damage and exposure of refuge archeological sites, and probably would result in further looting of graves and artifacts. The increased wave action in July will also exacerbate damage to all refuge facilities exposed to the reservoirs. Increased maintenance and repair of refuge dikes, roads, boat ramps, water control structures, etc. will result.

### **Summary**

With all the negative impacts to the fish and wildlife resources and refuge infrastructure addressed above, we strongly recommend that no change be made to the operation schedules of Barkley and Kentucky Reservoirs. If it is determined that a three-year trial will be conducted, we believe an EIS is warranted to be in compliance with NEPA. Also, the trial should be delayed until adequate baseline data has been collected so that the impacts can be fully assessed. Again thank you for the opportunity to provide our concerns on such an important issue.

Sincerely,



John T. Taylor  
Refuge Manager

cc: Jon Loney, Tennessee Valley Authority  
Tim Higgs, Corps of Engineers, Nashville

RECEIVED

MAY 13 2005

Appendix 1 - Item 5



## TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER  
P. O. BOX 40747  
NASHVILLE, TENNESSEE 37204

May 11, 2005

Lt. Colonel Byron G. Jorns  
District Engineer  
U. S. Army Corps of Engineers  
Nashville District  
P.O. Box 1070  
Nashville, TN 37202-1070

Re: Modification of Existing Guide Curve Extension of Summer Pool until July 15  
Kentucky Lake and Lake Barkley

Dear Colonel Jorns:

The Tennessee Wildlife Resources Agency is opposed to any extensions of summer pool level on Kentucky Lake and Lake Barkley as would result from modification of the existing Guide Curve. Likewise, TWRA is opposed to extension of summer pool level as would result from implementation of a demonstration project.

The recently completed Reservoir Operations Study (ROS) Environmental Impact Statement (EIS), as prepared by the Tennessee Valley Authority (TVA), is a three-year comprehensive evaluation of operational alternatives, which concludes that the existing summer pool Guide Curve for Kentucky Lake and Lake Barkley should not be extended.

Should COE undertake consideration of modifying the existing Guide Curve, the Corps should do so only within the framework of a comprehensive EIS that considers alternatives, including return to the original operational summer pool Guide Curve of June 15, gathers comprehensive baseline data for a minimum of three (3) years, and provides for public involvement comparable to the TVA ROS project.

The State of Tennessee

AN EQUAL OPPORTUNITY EMPLOYER

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Lt. Colonel Byron G. Jorns

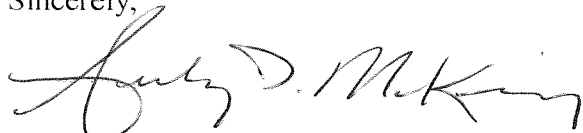
Page 2 of 2

May 11, 2005

Extension of summer pool has the potential for adverse cumulative impacts to migratory shorebirds, migratory waterfowl, in-reservoir water quality, habitat for fish and aquatic life, and increased flood damage.

Your time and attention in this important matter is greatly appreciated. If you have any questions or need additional information, please contact me at (615) 781-6577.

Sincerely,

A handwritten signature in cursive script, reading "Aubrey D. McKinney".

Aubrey D. McKinney, Chief  
Division of Environmental Services

cw

c Jon Loney, TVA  
Jim Fyke, Commissioner, TDEC  
Dr. Lee Barkley, USFWS, Cookeville

OPs



Appendix 1 - Item 6  
United States Department of the Interior

FISH AND WILDLIFE SERVICE  
446 Neal Street  
Cookeville, TN 38501

May 19, 2005

Lt. Colonel Byron G. Jorns  
District Engineer  
U.S. Army Corps of Engineers  
P.O. Box 1070  
Nashville, Tennessee 37202-1070

Re: Proposed Extension of Summer Pool at Barkley and Kentucky Reservoirs Until July 15

Dear Colonel Jorns:

We appreciate the Nashville District hosting a multi-agency meeting on May 3, 2005, to discuss the request by Congressman Ed Whitfield (R-KY) to extend the summer pool level at Barkley Reservoir to July 15 each year. To do so, of course, would also result in the extension of the summer pool on Kentucky Reservoir because of the existence of the unregulated Barkley Canal. This seemingly minor change has the potential to cause serious adverse consequences for federally protected endangered species, other wildlife species, and the management of two of Tennessee's premier National Wildlife Refuges (NWRs) – Cross Creeks NWR and Tennessee NWR. The following comments are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Migratory Bird Treat Act (16 U.S.C. 703-712). These comments were coordinated with, and are supported by, our Kentucky Field Office.

By letter to you dated May 9, 2005, Refuge Manager John T. Taylor (Tennessee NWR Complex) provided an in-depth analysis of the potential adverse effects of the proposed action on NWR operations and the species they support. We concur with, and fully support, those comments and recommendations. These comments, then, are intended to supplement Mr. Taylor's comments, which are incorporated herein by reference (copy enclosed).

Endangered Species

We are particularly concerned about the endangered and threatened species implications of the proposed action. The following federally listed species are known to occur in the project area:

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### **Below Kentucky Dam**

Ring pink (Obovaria retusa)  
Fanshell (Cyprogenia stegaria)  
Orangefoot pimpleback pearlymussel (Plethobasus cooperianus)  
Pink mucket pearlymussel (Lampsilis abrupta) (=L. orbiculata)  
Bald eagle (Haliaeetus leucocephalus)  
Least tern (Sterna antillarum)  
Piping plover (Charadrius melodus)

### **Below Barkley Dam**

Indiana bat (Myotis sodalis)  
Gray bat (Myotis grisescens)  
Least tern (Sterna antillarum)  
Bald eagle (Haliaeetus leucocephalus)  
Fat pocketbook pearlymussel (Potamilus capax)  
Piping plover (Charadrius melodus)

### **Above Kentucky Dam**

Gray bat (Myotis grisescens)  
Bald eagle (Haliaeetus leucocephalus)  
Pink mucket pearlymussel (Lampsilis abrupta) (=L. orbiculata)  
Price's potato bean (Apios priceana)

### **Above Barkley Dam**

Indiana bat (Myotis sodalis)  
Gray bat (Myotis grisescens)  
Bald eagle (Haliaeetus leucocephalus)  
Pink mucket pearlymussel (Lampsilis abrupta) (=L. orbiculata)

Of these, the mussels (fat pocketbook, pink mucket, orangefoot pimpleback, and ring pink), least tern, piping plover, and bald eagle are the species most likely to be adversely affected by the proposed project. For example, flow modifications may affect mussels via scour or by modifications to fish host behavior and the subsequent effects on mussel biology. Least tern and piping plovers may be adversely affected by altering foraging and resting habitat by prolonged inundation of mudflats and shallow-water feeding areas. Similarly, bald eagle foraging behavior could be affected by the proposed operational changes.

If the COE decides to go forward with planning for the proposal to extend the summer pool for Barkley and Kentucky Reservoirs by delaying drawdown, initiation of formal consultation with this office pursuant to section 7 of the Endangered Species Act will be necessary.

### **Wildlife Use and National Wildlife Refuge Management**

Delaying the fall drawdown on Barkley and Kentucky Reservoirs beyond the current schedule could have significant adverse effects on wildlife and their habitats throughout these two reservoir systems. As detailed in Tennessee NWR Complex Manager John T. Taylor's May 9,

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2005, letter, these potential impacts include: 1) further loss of fall mudflat habitat for shorebirds and early migrating waterfowl; 2) loss and/or degradation of mudflats for wintering waterfowl, eagles, gulls, terns, and wading birds; 3) reduction in the water and habitat management capabilities within managed refuge impoundments; 4) increased risk of flooding within the managed impoundments; 5) loss of herbaceous, scrub/shrub, and forested wetlands; and 6) accelerated shoreline erosion and associated damage to archaeological sites, boat ramps, roads, dikes, and other facilities – both on and off refuges.

These are serious concerns to state and federal wildlife managers, hunters, birdwatchers and other wildlife enthusiasts. The increased costs to the public of repairing infrastructure damages and protecting important archaeological and natural resources could be substantial.

Last year, TVA, FWS, TWRA, and other partners initiated a 5-year study of shorebirds and their use of mudflat habitat in the Tennessee River System, with emphasis on Kentucky Reservoir. Any proposed change in the fall drawdown schedule should not occur during the period of this important research.

### NEPA Considerations

In the May 3 meeting, COE representatives stated that a 3-year trial drawdown delay until July 15, as requested by Congressman Whitfield, could probably be conducted under a NEPA Categorical Exclusion. Due to the potential for significant adverse effects and likely public controversy (particularly from hunters, fishermen, and birdwatchers), we feel that the use of a Categorical Exclusion would be inappropriate.

As you know, TVA recently completed its Reservoir Operations Study (2004), which included both mainstem and tributary reservoirs. An Environmental Impact Statement was prepared pursuant to NEPA, and the entire project was subjected to full public review. The Nashville District COE at that time was insistent that no operational changes occur for Kentucky Reservoir, which significantly influenced the outcome of the ROS. It seems inappropriate for the COE to now propose studying an operational change for Kentucky Reservoir, and to propose implementing a 3-year trial under Categorical Exclusion.

We believe that the appropriate NEPA action, should the COE decide to go forward with a trial or permanent delay in summer pool drawdown of Barkley and Kentucky Reservoirs, would be to prepare an Environmental Impact Statement. Further, we believe that any NEPA analysis of changes to the current summer pool drawdown schedule should include an analysis of the change made in circa 1980 when the drawdown start date was changed from June 15 to July 01. That change had significant adverse effects on wildlife and NWR operations, and the current (Whitfield) proposal would further exacerbate these effects. Therefore, cumulative effects should receive particular attention in these analyses.

### Summary

In summary, we recommend that the proposal to delay summer pool drawdown on Barkley and Kentucky Reservoirs be rejected because of the many serious adverse consequences likely to



## Appendix 1 - Item 6

result from such action. In the event that you elect to go forward with a trial study, we strongly recommend that this action be supported by a thorough evaluation via development of an Environmental Impact Statement. Any action to move ahead with the proposal to alter the summer pool drawdown schedule also must undergo section 7 consultation with this office pursuant to requirements of the Endangered Species Act.

Again, thank you for hosting the May 3 meeting, and for affording us the opportunity to comment on the proposed delay in summer pool drawdown on Barkley and Kentucky Reservoirs. If you have questions or comments about anything in this letter, please feel free to call me at 931/528-6481, ext. 212.

Sincerely,



Lee A. Barclay, Ph.D.  
Supervisor  
Tennessee Field Office

Enclosure

xc: Lee Andrews, FWS, Frankfort, KY  
John Taylor, FWS, Paris, TN  
Jon Loney, TVA, Knoxville, TN  
Gary Myers, TWRA, Nashville, TN  
Michael Harding, KDFWR, Frankfort, KY



**KENTUCKY COMMERCE CABINET  
DEPARTMENT OF FISH & WILDLIFE RESOURCES**

**Ernie Fletcher**  
Governor

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Fax (502) 564-0506  
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**W. James Host**  
Secretary

**C. Tom Bennett**  
Commissioner

June 10, 2005

Byron G. Jorns, Lieutenant Colonel  
United States Army Corps of Engineers, Nashville District  
Post Office Box 1070  
Nashville, Tennessee 37202-1070

RE: Proposed Summer Pool Extension  
Lake Barkley and Kentucky Lake

Dear Lt. Colonel Jorns:

Thank you for inviting us to participate in the May 3, 2005, multi-agency meeting regarding proposed summer pool extensions on Lake Barkley and Kentucky Lake. Five preliminary alternate guide curves that extend the summer pool beyond the current guide curve were submitted for consideration during this meeting. Additionally, an interim alternative to extend the summer pool to July 15 during a three-year trial was proposed.

The original guide curve called for initiating draw down from the summer pool elevation of 359 on June 15 and reaching winter pool on December 1. The original guide curve was modified in 1980 to extend summer pool and begin draw down on July 1 to accommodate recreational interests. Currently, the actual draw down begins July 5 to accommodate the holiday period. The Corps manages water levels so that the pool fluctuates above the guide curve under most conditions. As a result, the actual pool elevation is above the guide curve for several days each summer and throughout the remaining part of the year. The proposal now under consideration is to extend summer pool to July 15 or beyond.

There are valid concerns that holding lake levels at the summer pool elevation of 359 for longer periods could indirectly affect fish and wildlife by modifying or inundating habitat. The proposed extension of summer pool to July 15 would inundate mud flats and shoreline vegetation for almost half of the growing season. Shoreline vegetation and moist soil plants provide important habitat, particularly for fish, shorebirds, and

waterfowl. Reaching a pool elevation of 357 earlier in the growing season is important for the fishery by maintaining existing shoreline vegetation. A pool elevation of 356.5 to 356.0 under the current draw down rate makes mud flat habitat available for shorebirds. Exposure of mud flats earlier in the growing season allows time for the growth of moist soil vegetation, which is important for waterfowl.

We recommend that summer pool not be extended beyond July 15. We feel that limiting the proposed summer pool extension to this date would minimize negative effects to fish and wildlife.

Please consider spillage requirements of any new changes in pool operations. Significant increase in spillage below the dam has the potential to result in fish kills. Spillage-related fish kills have occurred in the Tennessee River below Kentucky Lake. We request that the selected operating protocol incorporate measures that would minimize potential negative effects to aquatic resources downstream of the dam.

Thank you for the opportunity to review this proposed change. If you have further information or require additional information, please contact me at (502) 564-7109, Extension 420.

Sincerely,



Dr. Jonathan Gassett  
Interim Commissioner

JG/MDH/rem

cc: Lee Barclay, USFWS  
John Taylor, USFWS  
Robert Wheat, Tennessee National Wildlife Refuge  
Tim Higgs, USACE-Nashville District